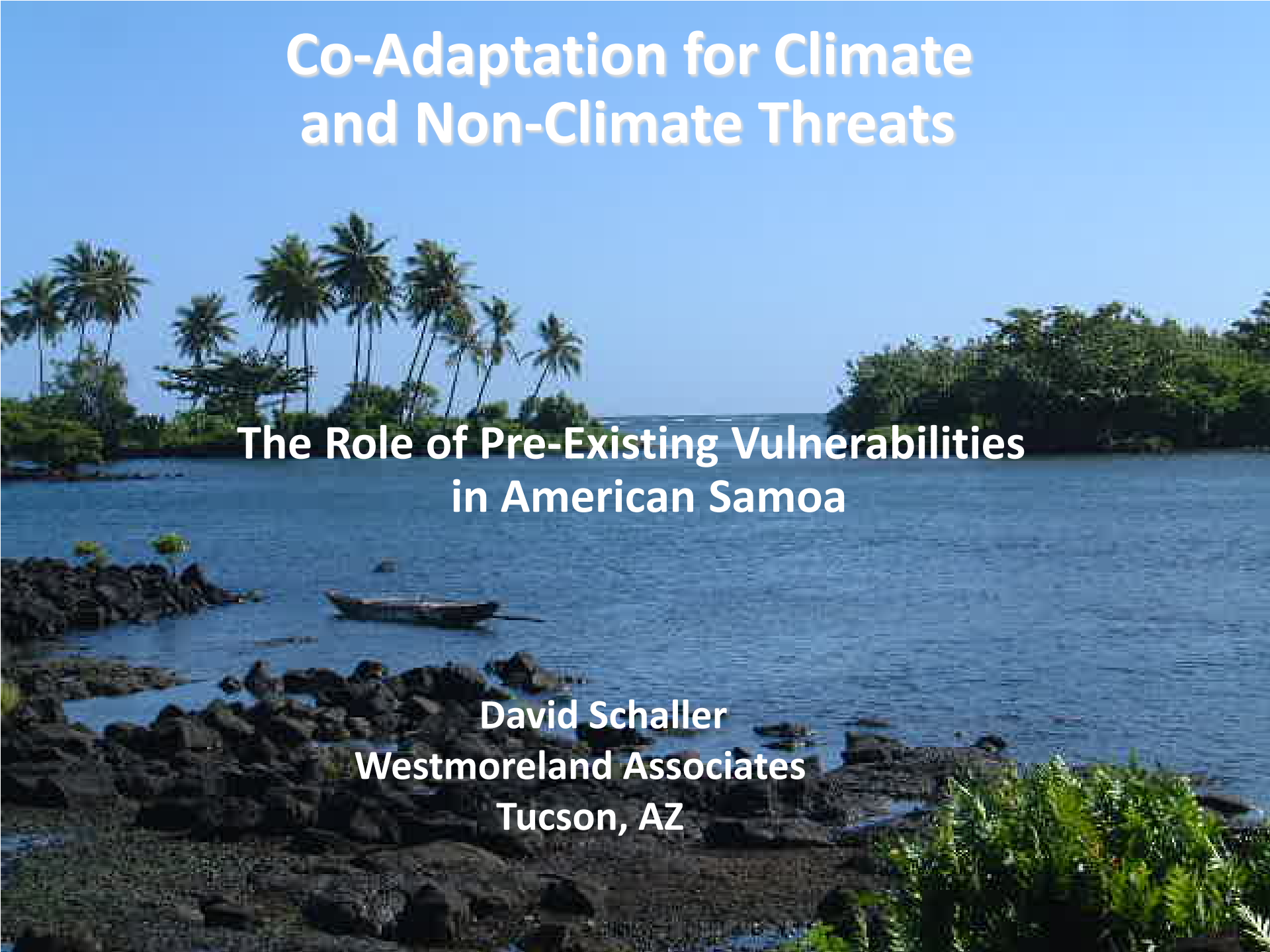


Co-Adaptation for Climate and Non-Climate Threats

The Role of Pre-Existing Vulnerabilities in American Samoa

David Schaller
Westmoreland Associates
Tucson, AZ

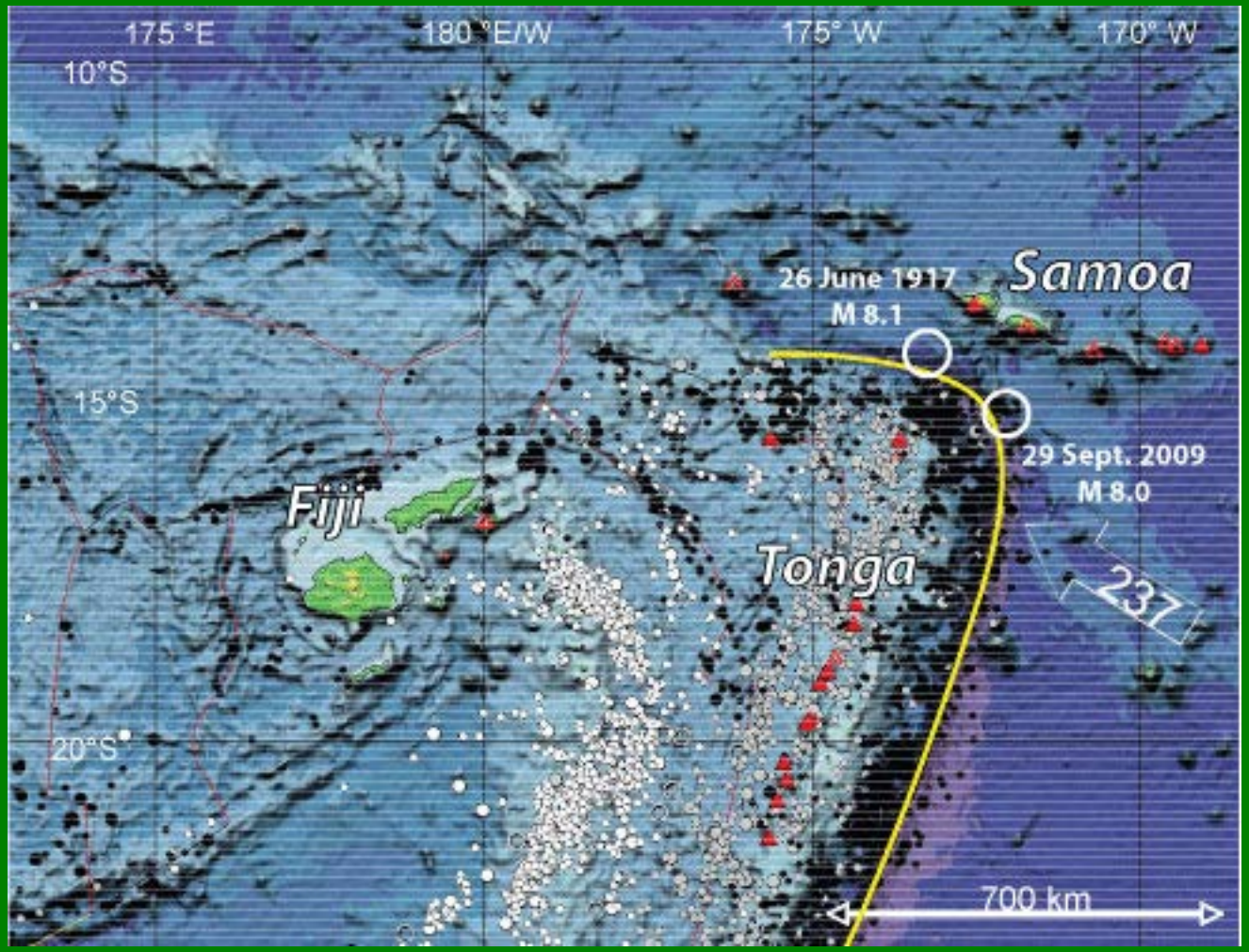

SOUTH PACIFIC OCEAN
National Park
Visitor Center
Vatia
Afono
Masefau
Onenoa
Sa'ilele
Tula
'Aoa
Faga'itua
Amouli
Au'asi
'Aunu'u
Alega
Aua
Pago Pago
Fagatogo
Utulei
Faga'alu
Fatumafuti
Fagasā
Fagamalo
Poloa
Amanave
Aoloaufou
American Samoa
Community
College
Tāfuna
Nu'uuli
Pago Pago
International Airport
Pava'ia'i
Leone
Fūtiga
Fogāgogo
Vailoatai
Vaitogi
North
0
5 Kilometers
0
5 Miles
Authorized park area
Coral reef
Hiking trail


2002 QT Luong / terragalleria.com
#samo388

Major Disaster Declarations in American Samoa

YEAR	DATE	DISASTER TYPE
2009	September 29	Earthquake, tsunami, and flooding
2005	February 18	Tropical Cyclone Olaf, high winds, high surf, heavy rainfall
2004	January 13	High winds, high surf, heavy rainfall associated with Tropical Cyclone Heta
2003	June 6	Heavy rainfall, flooding, landslides, and mudslides
1991	December 13	Hurricane Val
1990	February 9	Hurricane Ofa
1987	January 24	Hurricane Tusi
1981	March 24	Typhoon Esau
1974	November 9	Flooding, mudslides, landslides
1974	September 30	Drought
1966	February 10	Typhoon, high tides

September 29, 2009 Earthquake and Tsunami Strike Western Polynesia



Village of Satala
24 MW Power Plant Destroyed

ADDRESSING THE THREAT OF LONG-TERM ENERGY SUPPLY DISRUPTION: A STRATEGIC ENERGY ASSURANCE PLAN FOR AMERICAN SAMOA

July 2012

Energy Security Plan Focus

1. Collect Energy Supply/Demand Data
2. Characterize Energy Infrastructure
3. Describe Events Historically Responsible for Energy Supply Disruption
   - Actions Taken in Response
   - **Potential Future Events**
4. Methods for Assessing the Consequences and Severity of Energy Emergencies and Tracking the Rate of Recovery
5. Energy Emergency Response Plans and Contingency Measures

Pre-existing Vulnerabilities

A function of exposure plus sensitivity to a given amount of change minus adaptive capacity

Siting of energy assets in near sea-level locations
Lack of back-up energy assets
Outdated design of existing infrastructure
10 day reserve of fuel in a single location
Solitary coastal road for energy transportation
Landslide and storm flooding threats to energy infrastructure
Limited terrain for relocation of infrastructure
Complete reliance on imported energy and most other products
Undependable O&M apparatus, back-up parts, skilled staff


SPEED
LIMIT
20

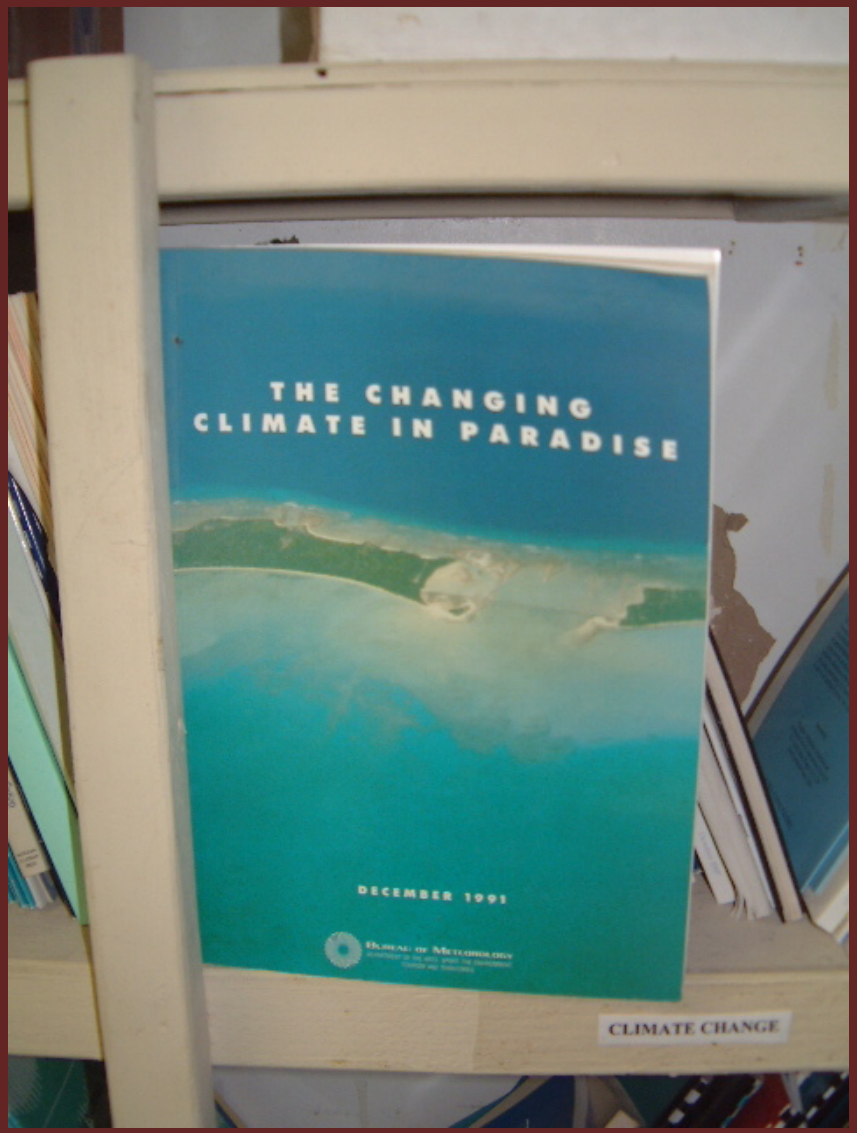

TSUNAMI HAZARD ZONE
LAUELEELE AFAINA I GALU LOLO
IN CASE OF EARTHQUAKE, GO TO HIGH GROUND OR INLAND
AGA'I LAUELEELE MAUALULUGA

Clear Evidence That Tsunami Adaptation Would Also be a Climate-Smart Adaptation Measure

“Sea Level Rise Hazard Zone” Signs Not Particularly Useful Despite the Threat Being More Permanent

Co-Adaptation to Climate and Non-Climate Threats: Energy Security Planning Has Become De-Facto Climate Adaptation Planning in American Samoa

Creating Redundant End-Use Fuel Storage Capacity
Undergrounding Coastal Power Lines
Reconsidering the Rebuild of the Satala Power Plant
Alternative Energy Options
Addressing Flood Hazard Potential
Hardening Energy Facilities
Population Relocation



Islanders Understand the Climate Threat

Never very far from water


CLIMATE CHANGE SUMMIT
"Fa'atuina O Faiganu'u Malolosi Ma Mausalī i le Pasefika"
February 1 – 2, 2011. Governor H. Rex Lee Auditorium

TsunamiReady™

NATIONAL WEATHER SERVICE

Weather-Ready Nation

National Oceanic and Atmospheric Administration

Fa’afetai tele lava